

Problem D: All Roads Lead to Thessaly

Tortoise: Good to see you, Achilles. I heard you were out of town.

Achilles: That's right Mr. T. I was visiting my home district, Thessaly. But let me tell you, with all the recent changes made by the ministry of transportation, travelling is becoming quite a headache.

Tortoise: I wasn't aware of any changes. What has happened?

Achilles: As you know, new roads are being built at a dramatic rate as of lately. But with so many roads, it becomes harder to provide for their maintenance and security...

Tortoise: True. As long as people can get to their destinations, sometimes having more roads isn't the best idea. Sorry, you were saying...

Achilles: ... well, the ministry of transportation decided to fully maintain only a subset of roads, such that those roads still make it possible to travel between any pair of cities. They always choose a group of roads that represent the minimum overall cost possible, taking into account that the cost of maintaining a road is proportional to its length. New roads can still be built if they reduce the overall maintenance cost, but all the abandoned roads will still be there, of course. You can imagine the confusion among travellers trying to decide which roads to use if they don't know in advance which ones are maintained and which ones are not.

Tortoise: Yes, I see. You know, I think it would be possible to create a system that, given a pair of towns, reports a sequence of maintained roads that form a path between them.

Achilles: That would be nice to have. Mr. T! Maybe you and I could create that system! We can figure it out from the lengths of all the roads. Oh, but what would happen if there is more than one group of roads that connect all cities with minimum cost?

Tortoise: I have heard that in the ministry of transportation they make sure that all the roads have different lengths, so there will not be a problem.

Achilles: Really? Wow, Mr. T, you never cease to amaze me. But please, explain to me why that is. And do it slowly, please. I'm not a computer scientist.

Tortoise: I know, you need more facial hair to at least *look* like one. Anyway, have you heard of a *spanning tree*? ...

Consider an undirected, connected graph that represents a group of N cities, and the roads that connect them. All roads that belong to a tree in the graph that connects all cities with minimum overall cost are considered *maintained* roads.

Your task is to answer a series of queries from travellers. Each query contains the names of two cities, A and B . Find a path from A to B using maintained roads only.

Input

Input starts with a positive integer T , that denotes the number of test cases. The first line of each test case contains two integers: N and M , representing the number of cities, and roads, respectively.

The next M lines contain the description of a road, formed by two strings A , B that are the names of the two cities connected by the road, and an integer L , the length of the road.

All names are composed of uppercase or lowercase characters from the English alphabet. You may assume that all N cities are connected through roads, and that all roads have distinct lengths.

The following line contains a single integer Q , which is the number of queries. Q lines follow, each one with a couple of strings A and B that represent the starting and ending points of a trip.

$T \leq 25$; $2 \leq N \leq 100$; $M \leq 1000$; $1 \leq \text{length}(A), \text{length}(B) \leq 10$; $A \neq B$; $1 \leq L \leq 10^5$; $1 \leq Q \leq 20$

Output

For each test case, print the case number in a line of its own.

Then, for each query i ($1 \leq i \leq Q$), start by printing "*** Query i** " in a single line, and then print the correct sequence of maintained roads that go from A to B . For each road, print the names of the starting and ending cities, and the length of the road in parentheses.

Sample Input	Output for Sample Input
1 3 3 Larisa Trikala 11 Trikala Volos 5 Volos Larisa 23 2 Volos Larisa Trikala Volos	Case 1: * Query 1 Volos Trikala (5) Trikala Larisa (11) * Query 2 Trikala Volos (5)